The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte BRIAN SEED,
CHARLES ROMEO and WALDEMAR KOLANUS

Appeal No. 2004-1736
Application No. 09/243,008

ON BRIEF

Before MILLS, GRIMES, and GREEN, Administrative Patent Judges.

GREEN, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 44-47, 51, 52, 72-75, 79, 100 and 101. Claims 44 and 79 are representative of the subject matter on appeal, and read as follows:

> 44. A cell which expresses at least two proteinaceous membrane-bound chimeric receptors,
>
> the first of said receptors comprising (a) an extracellular portion which is capable of specifically recognizing and binding a target cell or a target infective agent, (b) a transmembrane portion derived from a T cell receptor, a B cell receptor, or an Fc receptor protein which, in the absence of an intracellular signalling domain, is capable of signalling said cell to destroy a receptor-bound target

cell or a receptor-bound target infective agent, and (c) an intracellular domain that does not signal said cell to destroy a receptor-bound target cell or a receptor-bound target infective agent; and

the second of said receptors comprising (a) an extracellular portion which is capable of specifically recognizing and binding said target cell or said target infective agent, and (b) an intracellular portion which is derived from CD28.

79. A cell which expresses at least two proteinaceous membrane-bound chimeric receptors,

the first of said receptors comprising (a) an extracellular portion which is capable of specifically recognizing and binding a target cell or a target infective agent, and (b) a transmembrane portion derived from a T cell receptor CD3, zeta, or eta polypeptide, a B cell receptor, or an Fc receptor, and (c) an intracellular domain that does not signal target cell or target infective agent destruction; and

the second of said receptors comprising (a) an extracellular portion which is capable of specifically recognizing and binding said target cell or said target infective agent, and (b) an intracellular portion which is derived from CD28.

The examiner does not rely on any references.

Claims 44-47, 51-52, 72-75, 79, 100 and 101 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention. After careful review of the record and consideration of the issue before us, we reverse.

BACKGROUND

According to the Specification,

Although native T cell, B cell, and Fc receptors are or can be highly complicated multimeric structures not lending themselves to

> convenient manipulation, the present invention demonstrates the feasibility of creating chimeras between the intracellular domain of any variety of molecules which are capable of fulfilling the task of target recognition. In particular, the formation of chimeras consisting of the intracellular portion of T cell/Fc receptor zeta, eta, or gamma chains joined to the extracellular portion of a suitably engineered antibody molecule allows the target recognition potential of an immune system cell to be specifically redirected to the antigen recognized by the extracellular antibody portion

Page 10, lines 1-14.

The specification discloses further

> Thus, because the intracellular domains of the chimeric receptors mediate the proliferative responses of the cells, the coordination of the extracellular domains by a variety of aggregating stimuli specific for the extracellular domains (e.g., an antibody specific for the extracellular domain) will result in proliferation of the cells bearing the chimeras.

Id. at page 11, lines 26-32.

The inventors envision that cells expressing the chimeric receptors would be useful in treatment of conditions such as HIV. Thus, the specification teaches "[s]pecifically the invention provides for a method of directing cellular response to an HIV-infected cell. The method comprises administering to a patient an effective amount of cytotoxic T lymphocytes, said lymphocytes being capable of specifically recognizing and lysing cells infected with HIV as well as circulating virus." Id. at 13, pages 19-24.

DISCUSSION

Claims 44-47, 51-52, 72-75, 79, 100 and 101 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter that was not

described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As the claims stand or fall together, see Appeal Brief, page 5, we focus our analysis on claim 44.

According to the rejection, "[a]pplicant has no support in the originally filed claims or specification for the genus phrase language 'an intracellular domain that does not signal to said cell to destroy a receptor-bound target cell or receptor-bound target infective agent,' present in amended base claims 44 and 79." Examiner's Answer, page 3.

As noted by our reviewing court, the Court of Appeals for the Federal Circuit,

> In order to satisfy the written description requirement, the disclosure as originally filed does not have to provide in haec verba support for the claimed subject matter at issue. Nonetheless, the disclosure must convey with reasonable clarity to those skilled in the art that the inventor was in possession of the invention. Put another way, one skilled in the art, reading the original disclosure, must immediately discern the limitation at issue in the claims. That inquiry is a factual one and must be assessed on a case-by-case basis.

Purdue Pharma v. Faulding Inc., 230 F.2d 1320, 1323, 56 USPQ2d 1481, 1483 (Fed. Cir. 2000) (citations omitted) (emphasis added). We agree with appellants that the disclosure as originally filed reasonably conveys to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Appellants cite page 48 of the specification, lines 31-33, which describes a chimera that possesses a transmembrane domain joined to an intracellular domain of only three amino acids, wherein the chimera is capable of signaling through its transmembrane domain. See Appeal Brief, page 10. Appellants also cite the declaration of Dr. Brian Seed, which attests to the fact that the three amino acids do not signal, but rather anchor the chimera into the cell membrane, and that signaling is mediated by the transmembrane domain. Appellants conclude that "[a]s [the] specification provides a working example of a chimeric receptor that signals through a transmembrane (and not an intracellular) domain, precisely as specified by the present amended claims, the specification and the claims, prior to the present amendments, clearly included these features; no sub-genus has been created." Id. at 11.

The portion of the specification that appellants cite to states:

> To identify the minimal ζ sequences necessary for cytolysis, a series of deletion mutants were prepared in which successively more of the ζ intracellular domain was removed from the carboxyl terminus (Fig. 8A). Most of the intracellular domain of zeta could be removed with little consequence for cytolytic potential; the full length chimera CD16:ζ was essentially equal in efficiency to the chimera deleted to residue 65, CD16:ζAsp66* (Fig. 8B). A substantial decrease in cytotoxicity was observed on deletion to ζ residue 59 (chimera CD16:ζGlu60*), and further deletion to residue 50 resulted in slightly less activity. However, complete loss of activity was not observed even when the intracellular domain was reduced to a three residue transmembrane anchor (Fig. 8B).

Specification, page 48, lines 20-33.

Appellants also rely on original claim 44 to support that it is the transmembrane domain is capable of signaling target destruction. See Appeal Brief, page 9. Original claim 44 recites:

> A cell expressing a proteinaceous membrane-bound chimeric receptor, said receptor comprising (a) an extracellular portion which is capable of specifically recognizing and binding a target cell or a target infective agent, and (b) a transmembrane portion derived from a T cell receptor, a B cell receptor, or an Fc receptor which is capable of signaling said cell to destroy a receptor-bound target cell or receptor-bound target infective agent.

Thus, page 48 of the specification, coupled with the declaration of Dr. Seed and original claim 44, supports the limitation of an intracellular domain that does not signal target cell or target infective agent destruction.

The examiner asserts that page 48 of the specification is merely a single species, contending that the one species does not support all chimeric receptors wherein any intracellular domain may be used, so long as it does not transmit a signal. See Examiner's Answer, page 4. The examiner also contends that "[t]his property of such an intracellular domain is contrary to most tenets of T cell activation, since activation of T cells is accepted by those of skill in the art to occur via the intracellular domain." Id.

To give the examiner credit, we found this to be a close case. The example on page 48, however, coupled with original claim 44, reasonably conveys to one skilled in the art that appellants had possession of the claimed invention at the time the application was filed. In addition, the examiner has

acknowledged that the chimera having the three amino acid anchor described at page 48 of the specification is an example of a chimera having the claimed limitations, thus the skilled artisan would appreciate that other intracellular domains may be used in the chimera that would not signal target cell or target infective agent destruction.

CONCLUSION

Because we find that disclosure as filed describes the claimed subject matter in such a way as to reasonably convey to one skilled in the art that the inventors at the time the application was filed, had possession of the claimed invention, the rejection is reversed.

REVERSED

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